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Fostering Aging in Place: “Healthy Naturally Occurring Retirement Community” (H-NORC)

Qualities in a Southwest Ohio Suburb

Laura A. Preville

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May 2012

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“We who are elderly, we who don't see so well, we who can't walk so quickly- we also have something to offer. We're going, going...but not gone. We "old-olds," who live in American cities in such large numbers, need cities to be- and want to help make them- welcoming places for those who aren't keen of sight or fleet-footed, and for those who are headed the way we are going.”

-Sheila Solomon Klass, author, age 82

Abstract

This community assessment uses the concept of “H-NORCs” or Healthy Naturally Occurring Retirement Communities as a framework to analyze supports for aging (Masotti, Johnson-Masotti, Fick, & MacLeod, 2006) in Kettering, Ohio -- a first tier suburb of Dayton where the proportion of people over the age of 60 was 23.8% in 2010. In this study, I used focus groups and interviews to collect qualitative data on five H-NORC attributes: (1) economic policies that benefit seniors; (2) types of transportation support for seniors; (3) neighborhood design for physical activity; (4) opportunities for social integration and sense of belonging; and (5) health services. This study finds that Kettering is a regional support center for senior activity. City provision of senior services, volunteer opportunities, and regular exercise locations were perceived as protective of elder health and wellness. Participants perceived community outreach for citizens as a means of promoting health and longevity. Recent municipal projects demonstrate commitment toward improving neighborhoods to increase physical environment supports for aging in place according to H-NORC themes related to Universal design principles such as bicycle paths and sidewalk improvements. Still, it is important to note that although transportation services showed robust regular use by a small number of Kettering seniors, nearly all participants reported a lifelong relationship with driving that influences activity level and ability to participate in senior activities. Overall this study finds strong evidence of H-NORC qualities in Kettering related to economic policy benefits, sense of belonging, access to culture and service provision for seniors in the community. This study also suggests that H-NORC qualities related to physical supports in the built environment might be revised to more closely address Kettering’s suburban context.

Fostering Aging in Place: “Healthy Naturally Occurring Retirement Community” (H-NORC) Qualities in a Southwest Ohio Suburb

In North America, a majority of older adults choose to remain in neighborhoods where they have been long time residents. The challenge is that these neighborhoods were designed for young families with children rather than older adults who are “aging in place” after children leave the home (see census data and the American Association of Retired People (AARP) surveys). Aging in place, then, creates public health issues because seniors can have increased vulnerability due to functional, cognitive and psychological decline, and often, this decline can be related to their type of living environment and the available social capital within it (Clarke & George, 2005; Mendes de Leon et al., 1999).

In public health, health promoting policies exist further upstream in how they influence health as compared to more proximal risk factors related to specific disease states (Scutchfield, 2011). Several studies suggest that seniors can benefit from health promoting policies (Mendes de Leon, 2003; Seeman, 1996; Berke, 2007). Similarly, policies related to urban planning and community design can provide “upstream” influence on health outcomes such as increased physical activity and nutrition for healthy older adults and people of all ages (McGinnis, Williams-Russo, & Williams-Russo, 2002; Braveman, 2011).

Emerging recommendations formulated by the CDC Healthy Aging Network, the Robert Wood Johnson Foundation, Healthy People 2020, AARP, among other local organizations across the country advocate for national, state and local governments to address health needs of all citizens by including health promotion as part of built environment related policy (Miller, Pollack, & Williams, 2011; US Department of Health and Human Services, n.d.). Some argue that collaboration between municipal governments and public health organizations can result in

improved policies that support health behaviors in older adults such as regular exercise and maintenance of social connections (Masotti, O' Connor, & Fick, 2010). People studying older populations believe that if planners and developers improve accessibility and walkability in areas with a high numbers of older adults outcomes could include decreased long-term care expenditures (Clarke & George, 2005). Policy decisions, then, can positively influence physical function, social support networks, instrumental activities of daily living (IADLs), and mobility and access to services. Municipal supports for the elderly help to foster aging in place where elders remain in their community with greater ease and improved health.

This project aims to analyze to what extent one city, Kettering Ohio, can be defined as a community that supports the mobility, health, and lifestyles of older adults. The concept of “H-NORC” or Healthy Naturally Occurring Retirement Community, defined by Paul Masotti, provides a framework to analyze supports for aging in place within neighborhoods with high numbers of seniors (Masotti et al., 2006). A comparative analysis of the activities, infrastructure, and community supports within this suburban, mid-western city will be performed based on ethnographic study and conversations with community members. The overall community assessment will be compared to existing recommendations related to “elder-friendly” communities derived from the H-NORC model. One goal for evaluating Kettering in terms of the H-NORC model is to identify what is working well in a community with a higher than average number of seniors. A second goal is to identify and evaluate challenges faced by communities that support older adults, especially in a suburban setting.

Background

NORCs evolve as a result of aging in place. The demographic shifts in our population from cities to suburbs caused increased numbers of suburban seniors nationwide. These populations force communities to face public health policy questions that focus on how to improve communities to meet the unique needs of aging adults and, more particularly, create a need to consider how to make suburbs better for aging in place. The H-NORC builds on NORC, but emphasizes a set of ‘healthy’ ideals, which should be used to shape policy decisions. Prior research supports changes made within municipalities to support senior access to transportation and services. There are also multiple examples of NORC concepts influencing government policymaking such as Partners for Livable Communities, NORC-SSP programs, and H-NORCs, which are elaborated further below.

Aging in America

The U.S. census bureau projects that the population of adults over age 65 in America will increase on average by a factor of 104% by the year 2030 (U.S. Census Bureau, 2010). Although this relative increase of older adults will occur in urban, suburban, and rural communities, the majority of seniors are expected to prefer to age in place in the suburbs where over 56% of the suburban population will be adults over 65 (DeGood, 2011). The history of the development of suburban communities provides an explanation for this preference.

Suburban Lifestyle

During the 20th century, development around urban areas saw vast outward expansion away from urban centers and the invention of a suburban lifestyle where driving became central to mobility. Suburbs were designed for the single family home and cars that who could navigate between the more separately zoned areas (Jackson, 2012). A booming economy, expansion of

homeownership, and the automobile were major factors that fueled the post WWII movement to the suburbs. A suburban “sprawling” lifestyle, with dependence on cars and separation of land uses, is criticized because it can prevent an aging population’s ability to participate in society (Frumkin, Frank, & Jackson, 2004; Jackson, 2003; Jackson & Sinclair, 2012). Accommodating the aging population in these suburban settings is critical; as fewer retired people are moving to the sunbelt and Americans of all ages no longer follow the migratory trend of generations past. According to the US census, only 11.6% percent of people purchased a home last year, which is the lowest number since 1948. Forty percent of baby boomers born between 1946 and 1964 believe they will stay in their current home after retirement (Yen, 2011). When they were forming families they moved to the suburbs in great numbers and now may face new challenges including fewer children nearby to help.

Community as Aging Support

In 1975, an organization called Partners for Livable Communities in Washington, D.C. began its advocacy for making communities more livable for older adults. Although the group’s mission is to shape policy-making to assist those over the age of 65, these policies would effectively benefit all ages. They argue that communities must create systems that integrate “health care, daily living needs, transportation, housing, recreation, social services, and educational, social and cultural opportunities” (Partners for Livable Communities, 2011, p. 120). The organization continues to partner with Area Agencies on Aging (AAA) to build consensus on creating strategic plans for aging communities. Now, years later, under the influence of evidence based methods driving policy change, there is increased need for better information about the health impacts of the built environment on vulnerable populations to establish a firm basis for future community-level health policies (Miller et al., 2011). One governmental source

of support for funding community programs for elders is Naturally Occurring Retirement Communities Supportive Service Project (NORC-SSP) grants. These grants were implemented to coordinate transportation, health services, and volunteer opportunities, among others on the basis of residential status, not on functional deficits or economic status. NORC-SSPs programs allow health and social service providers to operate within an economy of scale. Officially, such Naturally Occurring Retirement Community programs are a recognized part of the Older Americans Act of 2006 (P.L. 109-365) and defined as a community with a concentrated population of older individuals, which may:

Include a residential building, a housing complex, an area (including a rural area) of single family residences, or a neighborhood composed of age-integrated housing — **where 40 percent of the heads of households are older individuals; or a critical mass of older individuals exists, based on local factors....** (Author added emphasis)

NORC-Supportive service programs (SSPs) require “community support for a NORC program, a mix of housing densities and types, networked health and social agencies, access to community institutions such as churches, associations, etc., a key agency to take the lead, resources to sustain the program, a suitable space that is convenient, accessible, ample, reasonably priced, and comfortable” (Ormond et al., 2004). There are currently 48 NORC-SSPs with Title IV grants in 26 states made possible by Older Americans Act Title IV funding (Jewish Federations of North America, 2012).

History of the NORC Concept

Not all NORCs are the product of government funding, however, “NORC” is also used to describe a type of neighborhood. The first NORC was a high-rise development in Manhattan called Penn South that consists of thirteen buildings constructed in 1962. The original tenants raised their children and then stayed in the buildings. Over time the area evolved into a NORC and health services were tailored to meet the health needs of a shifting demographic (Neal,

2008). Funded NORCs take many forms, including, vertical high-rise apartments with rent control in large urban areas like New York, suburban neighborhoods like those found in St. Louis and in rural settings with few residents aging in place scattered over a large area (Colello, 2007, Bronstein & Kenaley, 2010).

Across America there are over 300 naturally occurring retirement communities and each is different. Some have proportions of adults over the age of 60 at 60% of the total population while others are at 25% (Ormond, Black, Tilly, & Thomas, 2004). Some evolved as younger residents move out of neighborhoods while others are due to in-migration of seniors into a desirable community as they plan to downsize. They exist in rural, urban, and suburban areas. Given these differences, defining NORCs can be problematic.

Other locally devised solutions that build on NORC concepts include: elder villages, co-housing communities, “communities for a lifetime” and life-long communities. These models attempt to preserve function beyond the level of providing interventions for medical needs alone toward one of health promotion and social integration (Golant, 2011). One example of the “elder village” model is Beacon Hill Village in Boston where members pay a fee to a not-for-profit organization to get assistance with medical, home, and transportation needs. Research in other NORC communities suggests opportunities for “cost-efficient health and supportive services delivery, increased service availability, health promotion and crisis intervention, and community improvement activities” (Colello, 2007, p. CRS-1; Alley, Liebig, Pynoos, Banerjee, & Choi, 2007). However, there are often differences in the perceived needs of residents and the assessed needs of community dwelling adults and because services are available does not directly mean that older community members will want to utilize them (Cohen-Mansfield & Frank, 2008).

H-NORCs and Age Friendly Cities

The Healthy Naturally Occurring Retirement community (H-NORC) concept published by Paul Massoti in 2006 and the WHO concept of Age-Friendly Cities inspire this project. Unlike other NORC concepts introduced by Michael Hunt (Hunt & Ross, 1990; Marshall & Hunt, 1999), an H-NORC is defined as “a community where environmental characteristics positively affect senior-sensitive determinants of health” (Masotti et al., 2006, p. 1167). The H-NORC concept advocates for the expanded potential of naturally occurring retirement communities toward health promotion at the population level by including the neighborhood built environment as part of the strategy to support aging in place. This concept is found in subsequent publications from the WHO and other authors (WHO, 2002 & 2007; Braungart Fauth, Zarit, Malmberg, & Johansson, 2007; Masotti et al., 2006). Five qualities derived from both the H-NORC themes and the WHO formed a method by which to analyze the naturally occurring retirement community in this study. The derivation of these five themes is described in the methods section.

Statement of Purpose

This paper is aligned with the growing understanding that communities affect the health of older adults. In order to explore this concept, a mixed methods approach allowed for healthy older adults and community leaders to provide perceptions of supports for older adults in Kettering, Ohio. These perceptions along with ethnographic assessment of the community context are balanced against the derived H-NORC themes to determine the extent to which Kettering can be defined as an H-NORC. Challenges and future directions will be identified.

1. Define trends in current policy recommendations to promote healthy aging at the neighborhood and community level based on evidence from community initiatives.
2. What characteristics of Kettering, Ohio are perceived as helpful to seniors?
3. Does Kettering institute policies that are aligned with H-NORC qualities?
4. How well does Kettering fit within the H-NORC model and what next steps for its aging population might be possible?

Literature Review

Research supporting the creation of a built environment to better support health is largely based in comparisons between populations such as older adults in cities versus suburbs. As previously stated, suburban areas have increased dependence on cars due to density and zoning. The risk of functional decline in the elderly can make driving the only link to community in suburban settings. Environmental gerontology analyzes physical and social supports that can “buoy” or outweigh negative environments or disabilities such as the inability to drive in an isolating suburban environment. This project suggests that the impulse to change the environment to be more supportive to a range of mobility levels may allow for greater social cohesion and senior health as discussed in this section.

Built Environment and the Ecological Model of Public Health

This paper makes assumptions about how the built environment can affect health. The term built environment refers to “land use patterns, transportation...[both] physical infrastructure and services, and design features...such as streetscapes and buildings that together provide opportunities for travel and physical activity” (Handy, 2005, p. 4). It is also understood that the characteristics of place that influence health apart from the people who inhabit a place can be difficult to separate (Macintyre & Ellaway, 2003). Emerging evidence supports that the development of non-communicable diseases can be correlated with a non-supportive built environment (Jackson, 2012). For example, Ewing et al. (2003) noted that areas with higher indices of sprawl (such as low housing density and lack of mixed land uses in close proximity) leads to decreased walking, and increased likelihood of obesity and hypertension. Other connections exist between obesity, asthma, traffic accidents, and lifespan to where we live

(Clarke & George, 2005; Jackson & Sinclair, 2012). Hence, the built environment can impact the aging process.

Theoretical models concerning neighborhoods and the aging process find origin in the concept of “environmental press versus competence” introduced by Lawton in the 1980s. The balance between “press” and the demands of the environment and “competence” or the ability to cope with the environment symbolizes an effort against functional decline during aging (Lawton, 1982). Lawton’s work focused on the home environment but the concepts arguably relate to the ecological model of public health where upstream influences such as policy and neighborhood factors can impact health. The idea that social engagement or sense of belonging to place are able to “buoy” senior determinants of health such as physical function, hints at their interrelated nature (Glass & Balfour, 2003). Response to the environment can be defined as part of a continuum between adaptation and mal-adaptation further attenuated by “person-environment fit.” An individual can develop “competencies” that exist on this continuum that inform the extent to which health and functioning can be achieved throughout the aging process. Hence, Lawton provided the origin of the “use it or lose it” principle in gerontology (Glass & Balfour, 2003b; Wahl & Lang, 2004).

Similarly, the basic ecological model of public health analysis implies that “outer ring” influences such as policies and the built environment can affect an individual’s health apart from concepts of individual self-efficacy. All of these factors can be understood as interrelated or as part of “reciprocal relationships” depending on context. For example, constructs that bear weight on the ability of an individual to “age in place” successfully can include: individual behaviors, family resources, home and community environment, community resources and local or national governmental policy as part of an interactive web to influence health.

Senior Mobility Challenges

The distance seniors travel for goods and services shrinks with functional decline. This difference is most apparent when comparing the average daily miles traveled by females over the age of 65 and females between age 19 and 64 where older females travel on average about nine miles and younger females travel closer to 25 miles. There is a similar difference for males by age group. One study found that when seniors must stop driving, only about 12% would elect to use neighborhood transportation services (Collia, Sharp, & Giesbrecht, 2003). The reasons behind the inability to continue driving, such as low vision, may make the negotiation of public transportation quite difficult but door-to-door services may help to overcome this. Evidence also suggests that type of neighborhood setting can affect the number of walking trips an older adult makes out of the home. For example, a study in Virginia found that urban residents engage in a significantly more walking trips for errands each week than suburban residents (Lynott, McAuley, & McCutcheon, 2009). This gap signifies a design problem that affects senior health.

Senior Determinants of Health

The senior determinants of health can be defined in terms of physical function and social engagement. Traditional determinants focus on physical function related to preserving the ability of seniors to maximize quality of life by maintaining cognitive function, accommodate for possible physical functional decline, and prevent falls and accidents. One formal evaluation of individual functionality and autonomy, developed by Lawton and Brody in 1969, relies on how well the individual can perform the Instrumental Activities of Daily Living (IADLs). These activities include the ability to shop, make phone calls, cook food, manage money, drive or take a bus, do laundry and take medications (Lawton & Brody, 1969). Another aspect of health determinants considers community relationships. Community connections that influence the

more objectively measurable determinants, such as the IADLs, include evidence of social relationships and sense of belonging to place (Braungart Fauth et al., 2007). There is evidence that “social support and social activity are potentially modifiable factors associated with physical function in older persons” (Park & Lee, 2007).

Both personal and environmental factors support senior health. Verbrugge and Jette (1994) examined personal and environmental factors that influence the “disablement process” in aging. Research focusing on lifestyle choices, behavior changes, coping, and activity accommodations form the personal factors that influence disability while medical care, therapy, external supports and the physical and social environment form the environmental or “extra-individual” factors that influence disability (Verbrugge & Jette, 1994). Glass similarly combines multiple neighborhood factors that influence health and functioning. Her model emphasizes that socioeconomic conditions, social integration, physical aspects of place, as well as services and resources have a huge impact on senior health outcomes.

Environmental Supports for Senior Health

The concept of environmental supports for older adults who are coping with some degree of functional loss is not new but little is described on how environments and landscapes may be defined as preventive for loss of function (Abraham, Sommerhalder, & Abel, 2010). In individual environments, such as nursing homes, the ability to function is made easier through designed accommodations such as making sure medications are administered regularly or removing flooring surfaces that promote falling. Less obvious accommodations occur in places where communities have been able to promote social engagement and foster life-long bonding to places. Older adults often exhibit high levels of such bonding to place “based on the increasing amount of environmental experience, subjective evaluation and interpretation of places,

allocation of meaning, and cognitive and emotional representation and place attachment” (Clarke & George, 2005; Clarke & Nieuwenhuijsen, 2009). This idea is central to the H-NORC themes. Older adults with access to better built environments may have improved health outcomes. This theory creates the basis for current research attempting to develop objective criteria to describe physical environments such as type of housing, distances to shopping, types of streets, or amount of traffic in an attempt to find correlations to indicators of wellbeing in the population of older people who reside there (Burton, Mitchell, & Stride, 2011).

Indeed, it is known that perceived indicators of quality of life and health in the elderly are tied to mobility within community (Banistera & Bowling, 2004). Studies in gerontology examine the relationship between losing the ability to drive and changes in the psychosocial environment. One health outcome explored in these studies is the increased susceptibility to depression with decreased mobility. Clarke and George (2005) hypothesizes that adults with functional decline could see decreased loss of independence in physical locations that allowed for better “walk-ability” in order to access shops, pharmacies, and banks, which in turn can allow for improved IADL outcomes in daily tasks such as grocery shopping.

Maintaining Mobility

When distance increases between home and destination, adults may have a diminished sense of safety. Although not all seniors experience drastic reduction in mobility by a specific age, “in a large longitudinal study of persons aged ≥ 75 , 10% needed assistance to walk across the room, 20% were unable to climb a flight of stairs without help and 40% were unable to walk half a mile” (Hoxie, Rubenstein, Hoenig, & Gallagher, 1994). Also, the fear of falling creates a considerable burden on the activities of seniors. Close to 30% of all adults over the age of 65 will experience at least one fall during their lifetime. As the older population continues to grow, the

rate of falls and fatalities related to falling is expected to increase proportionally. Some studies identify specific interventions that can reduce falls in older adults who are already at risk for falling. Participating in an exercise program, particularly one that emphasizes balance training, has the potential to reduce falls in community dwelling elders by 17% (Sherrington et al., 2008). Evidence indicates that about half of falls occur outside the home environment although much of the prevention literature focuses on prevention of falls in the home (Berg, Alessio, Mills, & Tong, 1997).

Pucher discovered that rates of walking and bicycling increase with age in Germany and the Netherlands (Pucher & Dijkstra, 2003). These locations have considerably different built environments that support options for these activities. His research compared overall travel statistics in 2001 and found that, in Americans over the age of 65, only 6% of trips in urban areas were made by walking while the rates for people over age 75 in Germany and the Netherlands were 48% and 24% respectively. Additionally, Pucher found that walking as a mode of transportation increased with age in these locations which share a more urban form when compared with the more suburban locations in America (Pucher & Dijkstra, 2003). Older adults in America may restrict their activity because of concern about personal safety based on neighborhood characteristics and perceptions of crime (Handy, 2005). Pedestrian safety statistics in America also show that older adults are more vulnerable to accidents. Of all pedestrian fatalities between 2000 and 2009, “pedestrians aged 75 years and older suffered from pedestrian fatality rates of 3.61 per 100,000 people, a rate well more than twice that for people under 65 years of age” (Ernst, Lang, & Davis, 2011, p. 20). The call to change these risks from national organizations is increasing due to emerging studies that show multiple benefits of living in a walk-able community.

Mobility and Social Cohesion

Increased walk-ability in mixed-use neighborhoods was shown to correlate with perceptions of a person's social capital including familiarity with neighbors and sense of community when compared suburban settings with increased car dependence (Leyden, 2003). Organizations aim to foster both mobility and social cohesion in elders by employing simple steps such as increasing crosswalk times allow residents to feel safer crossing the street (Hoxie et al., 1994). Other recommendations for walk-ability derived from the urban planning community include creating complete streets and implementing universal design, and smart growth. These types of community planning allow for bicycle routes, implementing traffic calming by narrowing roadways and adding pedestrian refuges at street crossings. Older persons may also benefit from brighter signage and highly reflective paint due to changes in night vision with aging that account for most of the reasons an older driver may need to stop driving (Stutts, 2005). Evidence that these strategies will improve long-term health and wellbeing is increasing. These ideas inform the interconnected themes of the H-NORC principles where supports for environment are another extension of services that can encourage the development of social cohesion and sense of attachment to place.

Methods

This community assessment project utilizes ethnographic methods, such as participant observation, semi-structured interviews and focus groups to gain a sense of how senior lifestyles are supported in Kettering. The H-NORC themes explored in the analysis were derived from best practices in the literature and provided a comparative framework through which to analyze perceived and existing senior supports in Kettering through a mixed methods approach. The experiences of senior residents, members of the local senior center who live near Kettering and city employees who work with seniors were explored through focus group interviews, while key aspects of the community built environment were placed into context through asset mapping and ethnographic observations. Administrative and survey data from public sources related to the neighborhood design aspects of the H-NORC principles complemented the description of Kettering. Quantitative data sources included: maps from *Policymaps.com*, The City of Kettering Senior Survey of 2007 (Jones, 2007), U.S. Census data, the National Cooperative Highway Research Program, and information provided by Kettering city employees.

The mixed methods approach in this study followed an iterative process where concepts introduced by participants helped drive the inquiry. Basic demographic information including age, marital status, employment status, city of residence, use of the Kettering senior center, and years of association with the Kettering community were collected from each participant who was a volunteer or member of the senior center. Four focus group sessions with senior center members allowed for comments from sixteen respondents. Questions asked of seniors at the Charles I Lathrem Senior Center (CIL) followed this general guide:

1. How do you feel about Kettering as a place to live?
2. What do you like to do in Kettering?

3. How do you get around in Kettering? Do you ever walk to your destination?
4. Do you ever use the library in Kettering? Do you go to the parks in Kettering?
5. What types of services does Kettering provide specifically for senior citizens?
6. Do you feel safe in your community?
7. Do you know your neighbors?
8. Have you ever needed home health care services in Kettering?

Six semi-structured qualitative interviews were conducted with city program employees in order to identify what characteristics in the community were aligned as supportive to the senior determinants of health based on the H-NORC themes. Employees of the Lathrem Senior Center who participated in this study were the senior services coordinator, transportation coordinator, senior center manager, volunteer coordinators for the city of Kettering, or employees within the city of Kettering planning and development office. Each participant provided perceptions and comments related to their employment in Kettering. Questions of key informants included information about their awareness of community support for seniors related to housing, safety, and transportation/mobility. General thoughts about the elderly population in Kettering were also explored. For instance, they identified existing programs available to residents related to transportation services, health service use, or other governmental policies to assist older adults, such as property taxes or home upkeep assistance. Physical characteristics of areas in Kettering were also evaluated including walk-ability, presence of parks, amenities, and service use as well as the emerging comments by the senior citizens related to sense of community belonging and social support. Prior approval for conducting this research was granted by the Wright State University Institutional Review Board. Verbal informed consent to participate in the study was gathered from each participant after a public recruitment process in

the newsletter of the Charles I. Lathrem Senior Center (CIL). All the names used in this study are fictitious to protect anonymity.

Asset Mapping

As part of the assessment of the study area a preliminary asset map was created based on a tool from the UCLA institute for public policy research to better understand community supports for seniors in Kettering, Ohio (United Hospital Fund, 2012). Global Information System (GIS) layers provided by the City of Kettering maps department highlight community amenities such as planned bike routes, parks, and bus stops. Montgomery County GIS layers include sidewalks, parcels and city corporation boundaries. Amenities specific to seniors were added to the asset map including locations of the main hospital and clinics, churches, grocery stores, retirement communities (assisted living and nursing homes) and government buildings. Addresses for each of these institutions were tabulated into a dataset that was uploaded to the asset map.

Deriving the H-NORC Principles

The H-NORC themes used in the overall community assessment were derived from Paul Masotti's policy initiatives for H-NORCs (Masotti et al., 2006) as well as the WHO "Checklist of Essential Features of Age-friendly Cities" (WHO, 2007). The Age-friendly Cities checklist is an extensive list of community qualities including: outdoor spaces, transportation, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, and community and health services. Some of the examples in the WHO Checklist also appear in the H-NORC policy initiatives so five H-NORC criteria were derived by combining ideas from both sets of recommendations. The derived H-NORC criteria used in this analysis are: (1) economic and policy benefits for seniors; (2) neighborhood design

for senior activity; (3) transportation services and mobility; (4) community support and involvement; (5) and health-related service use. Examples of each H-NORC criteria appear in Appendix 1. The level of evidence found in the study for each example appears in a three part scoring scale of: “strong evidence, some evidence and no evidence” as assigned by the study author.

Data Analysis

Data collected during focus groups and key informant interviews were digitally recorded and solely transcribed by the principal investigator by using Dedoose[®], a password protected program designed for qualitative data analysis and mixed methods research. The principal investigator performed all subsequent analysis of the transcripts and applied codes to the data. Initial codes were based on the derived H-NORC principles; however, the coding process was flexible in order to uncover recurring themes and identify connections between the descriptors of the participants and perceptions about living in Kettering as an adult over the age of 55.

Associations between the characteristics of the participants and their perceptions related to the H-NORC themes were explored. Broad community characteristics derived from the quantitative/administrative data provided greater context through which to examine the ethnographic data. Emerging themes were also coded including impressions related to aging, low-income seniors, and other examples of neighborhood support.

Study Site

Kettering, Ohio, an inner ring suburb south of Dayton, Ohio, is the second largest city in the Miami Valley Region (after Dayton). Kettering is well known for having an above average number of services to senior citizens in the region. Kettering is a large community where 23.8% of the population was over age 60 during the 2010 census. See map with census blocks showing population above 60 (Figure 1).

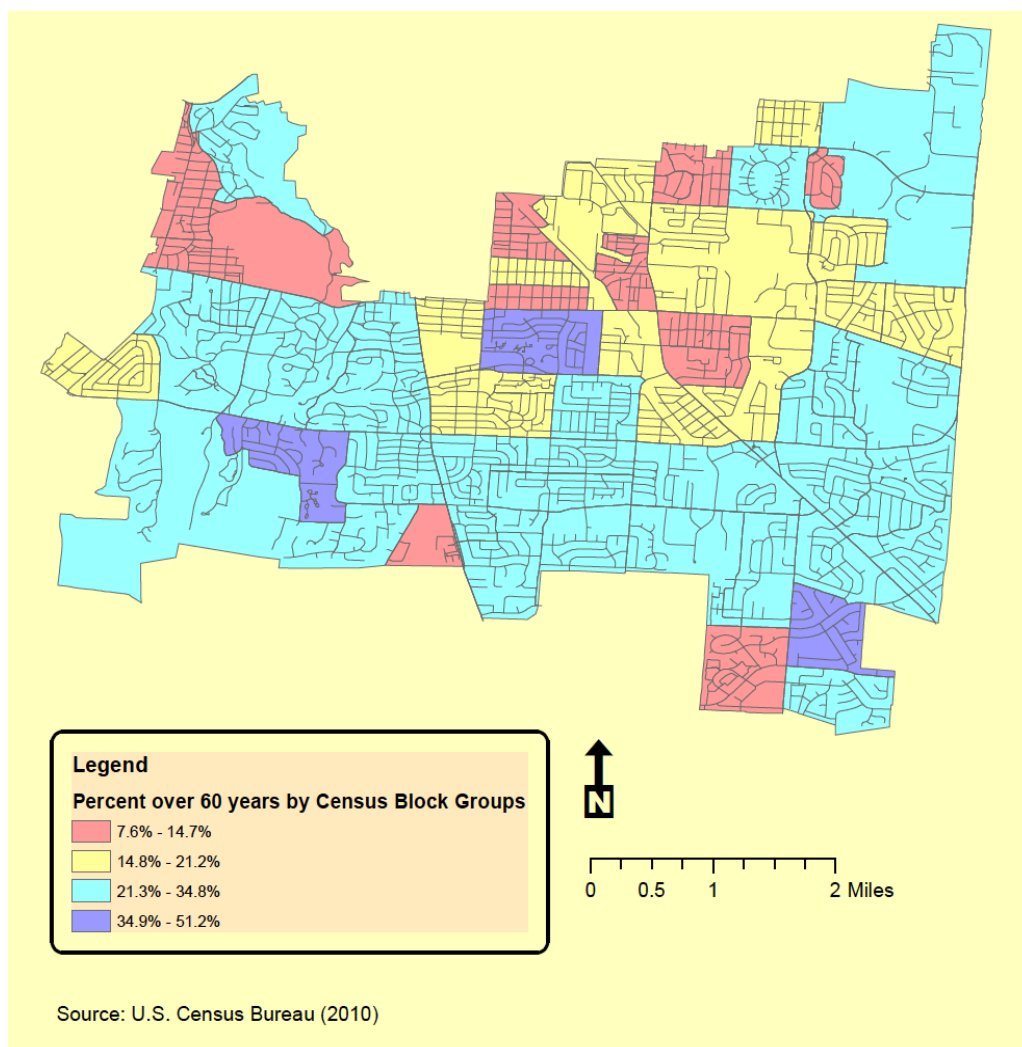


Figure 1: City of Kettering with population over 60 years by census block group

A table comparing the population of seniors in Kettering with county, state and national figures appears below (Table 1). The city had a population approaching 70,000 in 1970 and then

began a steady decline. The population declined by a thousand people between the 2000 and 2010 census similar to other mid-western cities. The area's largest employer Kettering Medical Center has replaced a former manufacturing and industrial economy.

Table 1. Comparison of senior population in Kettering to county, state, and national figures

	<i>Kettering</i>	<i>Montgomery County</i>	<i>Ohio</i>	<i>United States</i>
Total population	56, 163	535,153	11,536,504	308,745,538
Population count over age 60	13,372	112,930	2,287,424	57,085,908
Percent of total population Over age 60	23.8%	21.1%	19.8%	18.4%
Median age	40.9	39.2	38.8	37.2

Source: 2010 Census (U.S. Census Bureau, 2012)

The land area was originally settled as Van Buren Township prior to its official incorporation in 1841. The village of Kettering preceded the city of Kettering by about 20 years as the current boundaries of Kettering were annexed from surrounding townships. It is a first tier suburb that developed between the late 1940s and late 1960s to house working class families for the GM Delco Products in Kettering and nearby GM Delphi plant in Moraine. Unlike earlier industrial towns, no rivers or waterways traverse Kettering. It is a post-interstate development with highways on all sides to support manufacturing growth at Delphi and other companies into the late 20th century. The Delphi plant closed its doors in 2008 after over fifty years in the community and the recent decline in employment has affected the city.

Kettering has a lower number of residents at risk for poverty than the rest of Montgomery County. According to Housing and Urban development data from 2000, the home ownership and rental rates among older adults in Kettering (aged 62 and above) were as follows. Around 35% (5,868/17,067) of all home owners in Kettering were over 62 and over 61% of these had incomes

>80% of the poverty line. Twenty percent of all renters in Kettering were over age 62 (1,726/8600) and 16.9% of these had incomes <30% below the poverty line. These data show that Kettering has residents who are aging that fill a wide range of income levels where home ownership among elders showed less danger of poverty than those who rented (Cities of Dayton and Kettering, Ohio, 2010). According to the U.S. Census, Montgomery County statistics for poverty level show that about 15.7% of residents live below the poverty level while in Kettering there were 6.2% of the total population living below the poverty level in 2009 (U.S. Census Bureau, 2012).

The Kettering Health Network, a large community hospital with a level I trauma center, employs many of the city's current residents. Kettering is uniquely central to the region and shares boundaries with the cities of Dayton and Oakwood to the north, Beavercreek and Riverside to the northeast, Centerville to the south, and Moraine to the west. The city has three large Kroger supermarkets, a Meijer superstore and a Trader Joes and is a regional grocery supplier. Other community assets related to seniors and health include five large nursing homes with a total of 519 beds within the city limits and two assisted living facilities (Ohio Department of Aging, n.d.). One fifth of the total housing stock in Kettering (20.9%) was built after 1970 (policy maps.com).

No area in Kettering is a designated NORC-SSP demonstration project, but the government structure provides services to residents over the age of 55 living in their own homes through municipal programs. The city is unique in that the government has a senior division that was created in 2001 through a state grant made possible by Peggy Lehner, a state senator, when she was vice mayor of Kettering. The senior services coordinator position was a large part of the 2001 grant. The coordinator serves the community from three locations within the city: at city

hall, at an office at a local shopping center, and at the senior center. The coordinator reports directly to the city manager's office. Awareness of emergency medical services (EMS) and fire safety for seniors is part of senior service provision in the city. Regular Frail Elder Council meetings address the needs of homebound citizens. The senior services coordinator coordinates the seven to eight members of this council with input from the senior transportation coordinator, the city manager, and representatives from local law enforcement and city council.

The senior services coordinator position was initially created as a phone hotline to coordinate the resident's use of health services but grew into a position filled by a nurse who can do home visits and help to assess the health of residents. The current senior services coordinator is a Certified Nursing Specialist (CNS) who completed 106 home visits in 2010 and 118 in 2011. She interacted with an average of 2,100 Kettering seniors per year in the last three years, as part of coordinating service needs ranging from finding home health services, performing home assessments, and identifying benefits for residents. Other communities usually have a social worker at a senior center to provide information by phone for senior services (personal communication with senior services coordinator).

Other organizational characteristics in Kettering that demonstrate a commitment to senior citizens include a volunteer program coordinated through the city and a large recreation complex attached to the local senior center. The Area Citizens Together in Volunteer Endeavors (A.C.T.I.V.E.) Volunteer Program was started in 1979 and provides opportunities to volunteers of all ages. An average of 50,000 hours of volunteer service per year help to run the government and serve the citizens of Kettering. Positions are created in every city government office for volunteers from reception desk, word processing, mail delivery, assisting police and fire departments, and providing other professional services as a volunteer. Other cities have offices

coordinating volunteers, but few are as senior focused as the office in Kettering. The office in Kettering is a member of a national organization devoted to the practice of city volunteering offices, the National Association of Volunteering Organizations in Local Government (N.A.V.P.L.G.). According to the volunteer coordinators, Kettering is unique because it is able to staff two positions to manage its volunteers while other municipalities create volunteer positions to managing volunteers (communication with the volunteering office).

Interestingly, around 30% of the volunteers live outside Kettering but volunteer in the program that serves only Kettering (personal communication with volunteer coordinators). The regional use of amenities in Kettering extends to its recreation and senior centers. The award winning recreation center facility and the attached Charles I. Lathrem Senior Center with newly constructed aquatics center attract many people of all ages from the region. About 20% of memberships at the senior center come from seniors who live in surrounding communities (personal communication with senior center administrator). Kettering is also known as a community with twenty well-maintained neighborhood parks on 162 acres within the city's 18.7-mile area.

Kettering is facing a number of economic hardships including \$906,000 less for local government from the state of Ohio, an end to tangible personal property tax reimbursement, and a decrease in property tax revenue of around \$600,000 after re-valuation by Montgomery County. By 2015 the annual decrease in the city revenue will reach \$3.7 million including loss of the estate tax at the state level (Patterson, 2012).

Study Sample

Key informant characteristics were based first on their status as employees in Kettering working with seniors and perceptions they developed through their role in the community. All city employees were between ages 45 and 60. The length of time of key informant employment with the city of Kettering senior programs varied between 3 years and 30 years but all had lifelong experiences with seniors. All were residents of Kettering.

The characteristics of focus group participants appear in Table 2. The focus group participants represented the point of view of the seniors who are aware of the services and amenities for seniors in Kettering. The participants were all Caucasian reflecting >95% of the population in the study area. Three-fourths were female and the average age was just under 75 years with a range in age from 62 to 86. Over 81% of the participants live in the city of Kettering. The participants shared the following characteristics: 69% (11/16) have family in the area, 75% (12/16) live alone, and 62.5% have lived in Kettering for over thirty years. A few participants had moved to the area from the East coast within the last ten years (3/16), including, one who relied solely on other forms of transportation. These individuals had spent most of their lives in urban areas within New Jersey and New York before moving to the greater Dayton area later in life. Women made up 75% (12/16) of the focus group and 60% (6/14) were widowed, as is representative of older populations. The average number of years of membership to the local senior center was eleven years with three reporting over fifteen-year involvement. At least five of the participants were regular exercisers who reported visiting locations in Kettering for walking or aerobics multiple times per week. All participants identified themselves as volunteers either locally (15/16) or abroad (1/16). Not shown in the table were three seniors with significant connections to Wright Patterson Air Force Base. One female widow and two recently retired

young male seniors thought of Kettering as having a significant connection to the base among many retirees who stay in Kettering after completion of military service or retiring from a civilian job on base.

Table 2. *Characteristics of focus group participants*

<i>Focus Group Participant Characteristics</i>	<i>Number</i>
Gender	
Female	12
Male	4
Age	
65-71	7
72-80	6
>80	3
Widowed/widower	
Yes	6
No ^a	10
Place of residence	
Kettering	13
Beavercreek	3
Riverside	1
Living with	
Self	12
Partner	4
Years in Kettering	
<10	3
21-30	3
31-40	3
>40	8
Average number of years of membership to senior center	(Range between 2 and 30 years)
Mode	11
Median	10
Number of visits to the senior center per week	
1 to 2	4
2 to 3	7
> 3	5
Family in the area	
Yes	11
No	5

^a One female was divorced, one female never married

Perceptions of Aging in Kettering

The perception that Kettering has characteristics that are helpful for seniors was a recurring theme that emerged from the focus group discussions. The following list of perceptions encompasses the respondents' comments:

1. Maintaining health by remaining physically active through exercise and participating in the community was critical to well-being.
2. Not enough Kettering seniors were active, only a minority of residents participated in these social and cultural activities.
3. Volunteer coordinators and senior service coordination were perceived as strong assets that could become more widely used by other seniors in the community.
4. Senior Services Coordinator as an anchor for informing seniors in the city of Kettering as well as coordinating efforts for seniors through the Fire Department, Police Department and Property Maintenance Division.
5. Use of transportation services or public transportation was perceived as important but almost all participants voiced difficulty in using such services because they liked driving.
6. Discussions related to physical distance to goods and services became less relevant.
7. Driving to locations for physical activity was a shared norm among participants rather than walking between destinations for physical activity.
8. Housing options were perceived as flexible for both new families and for those aging in place due to single story ranch style homes that are easily modifiable.
9. Dayton region was perceived as less successful in supporting seniors due to less programming options.

10. A sense of Kettering as a “regional” senior-friendly community emerged. Of the near 15,000 total seniors in Kettering, around 2000 are senior center members (communication with senior center employee). The senior center draws membership from the region surrounding Kettering where total membership is approximately 80% residents of Kettering and 20% non-resident members from adjacent cities, especially Centerville and Beavercreek.
11. There are over 400 volunteer positions for all residents in Kettering. These positions exist in all city government offices from engineering to the auditor’s office and are considered part of social health and sense of purpose for seniors who participate.
12. Seniors from Kettering and the surrounding region fill almost all city-managed volunteer positions in Kettering. Of these, most senior volunteers in Kettering are not members of the senior center so that approximately 30% are both volunteers with the city of Kettering and senior center members (communication with volunteer coordinators).

Kettering Qualities According to H-NORC Criteria

This section presents more extensive findings from focus groups as well as field study and ethnographic data as a means to analyze Kettering within the framework of a Healthy Naturally Occurring Retirement Community (H-NORC). I organized this section of the paper according to five interrelated themes that positively affect the senior determinants of health as derived from Masotti's H-NORC and the WHO healthy aging cities checklist (WHO, 2007). The themes are meant to focus the reader for the content that follows. A table with examples of policies that support aging in place derived from Masotti provides a sense of the evidence uncovered in this analysis. A score grid for each policy example appears as part of the table in order to demonstrate the extent of the evidence. The scores range from "No Evidence," to "Some evidence," to "Strong evidence" according to data collected through the community assessment and the interpretation of the principal investigator. "The City of Kettering Senior Survey," completed in 2007 by the Center for Urban and public affairs at Wright State University, provided a wider context to compare perceptions of senior services within the broader Kettering community since the participants in this study represented the view of seniors with high levels of participation. Information from this survey enriches qualitative and ethnographic data in the next section.

1. Economic and Policy benefits for seniors in Kettering

<i>H-NORC Quality</i>	<i>Policy Evidence</i>		
	No evidence	Some evidence	Strong evidence
Zoning allows walking distance access to goods and services		X	
Property tax concessions or upkeep assistance exists for homeowners.			X
Local service providers and community businesses make services available and affordable to residents.			X
Local government progressively demonstrates senior-friendly policy decisions.			X
Evaluation/Advocacy of age relevant issues in long term planning in state, regional, county or community levels.			X

Kettering aligns with the H-NORC policy recommendations in terms of long-range planning and policy benefits for seniors. Overall the zoning in Kettering accounts for multiple types of residential zones from single to multifamily but commercial areas are zoned apart from where people live. There are neighborhoods that are close to retail developments and can accommodate walking but mixed-use developments such as residential units situated above retail, typical of urban settings, do not appear within the city limits. Long-term resident respondents mention a plan to stay in Kettering because of “services for seniors.” Respondents perceived multiple positive qualities for seniors in Kettering that serve as models for the Greater Miami Valley Region and Ohio. These included programs run by the city government including the Charles I. Lathrem (CIL) senior center, the senior services coordinator position, recreation and exercise locations throughout the city, the subsidized lunch program served weekdays at the CIL, transportation services and city managed volunteer opportunities for local residents.

The Lathrem Center

About 27% of Kettering’s seniors are members of its award winning senior center. The senior center members who were part of this study described the Charles I. Lathrem Senior

Center (CIL) as “*a model senior center*” that attracts seniors from outside Kettering. “Carl” a married, 69-year-old senior from the nearby suburb Beavercreek mentioned, “*when you visit other centers in Springfield, Waynesville or Columbus, nobody else has this. Other places have bingo or card playing room only shared with other things. Now, only old people play bridge.*” Carl represents the point of view of many young seniors that certain activities are only for “old people” and he might not be a member of the senior center if it were like all the rest.

The CIL is unique because it is physically connected to the city’s recreation center and next door to the city’s new Adventure Reef Water Park. This proximity allowed respondents like Carl to become involved with senior activities after first visiting for recreation and arguably, strongly influences the profile of many seniors who visit the facility regularly. The women in the focus groups overwhelmingly participate in regular senior exercise classes. Another man from outside Kettering made the comparison to the Beavercreek senior center:

The best part is that the senior center is part of the rec center. If you go to Beavercreek they have three little pump whatchamacallits (makes elliptical machine motion with arms),” here there is a pool, activities, and classes. The tone of active seniors is made by the proximity to the rec center. Even if you are a non-member you can join in the activities. This is why it’s the best senior centers there is.

“Frankie” is able to use the social scene at the CIL to help organize dances at other senior centers. He also was able to learn how to use email to help invite seniors to the dances. Many respondents <80 years old shared a common introduction to senior center life in Kettering. They first came to the recreation center years before being a senior citizen, then saw the senior center and decided to join. A female from outside Kettering provided further support for the regional draw of the center for exercise. “Marlene”, a 79-year-old married senior from Riverside, was told by her doctor to walk for her health. She had trouble walking regularly in her own neighborhood in the city of Riverside due to difficulty finding a walking area near her home:

I tried the Lorhey Community Center of Dayton...downtown for a while but it is practically non-existent now. They changed over to daycare for seniors. Also, I was going to the Burkhart recreational center, that building was torn down the used to do the meals on wheels down there...and I also go to the mall and walk, Fairfield Mall.

She visits Kettering for walking locations associated with the city's parks and recreation and now eats lunch at the senior center three times per week. She also mentioned that as a caregiver for her husband she enjoys the opportunity to be social with like-minded people.

Respondents perceived a clear division between the recreation center and the CIL. Senior center programming occurs in the designated senior area within a large building complex. Main attractions include the subsidized lunch program, senior aerobics classes, educational opportunities, bingo, a pool hall, and a library for card playing. "Trudy", a single senior aged 70 visits to play games or volunteer in the morning and stay for lunch. She also enjoys: *"Sinclair college classes, rumi cube, exercise programs, the walking track, and that nurses come in and do blood pressure screening, and blood sugar screening many times per month."* Part of the building is shared with other community groups and city-funded camps for disabled children and their families occur in the center. One employee stated that *"the seniors who come to the center don't mind sharing the space, but they also are protective of their area."* During recent renovations to the main exercise room in the senior center the seniors were moved to a room in the main recreation building. They found the room too cold and it lacked enough space for people in wheelchairs so they demanded a quick return back to the original classroom (communications with senior center employee). One respondent described the recent fight for senior parking immediately in front of the senior center after the city opened the adjacent aquatics center: *"We were ready to go to the senior center council to get special senior parking spaces in front and they finally gave us the signage we needed; now there are guilt signs (smiling)."* Also, zones within the senior center have their own character.

Senior Participation

The cost of using services at the senior center increased in 2012 to 37 dollars per year for residents and 45 dollars per year for non-residents due to a new ten-dollar activity fee.

Respondents who live alone and have no nearby family voiced concerns over the increase in cost. Two seniors who depended on social security income in different focus groups voiced the following concerns about cost of programs:

People do not care (tearful). There is nobody who is going to take care of people who make less than \$20K a year. This senior center does not seem to understand that if they raise the price of the senior center that there are people who can't afford it. The prices just keep going up and up. I finally got a raise on my social security and then it gets taken away by Medicare. This place does not seem to understand that if a senior lives only on social security that they are not going to afford to come to a place like this. If you had a choice between medication and food on the table or coming here they are going to pick their medication.

I know they have to charge that but that's the way I feel it's expensive, but I go on them because it's something that I like to do. It's social. The one going to New York coming up is three days for almost three thousand dollars. It's too much!

These responses resonated with comments from other focus group members who recalled the new scholarship initiative through the city of Kettering for low-income seniors described below.

There seemed to be awareness of seniors who need financial assistance in Kettering and a feeling that the city should accommodate them.

The Kettering Parks Foundation is an important source of funding for senior programs. It seeks and receives grant funding from several sources including over \$100,000 from the W.K. Kellogg Foundation. The city parks and recreation department, that manages the recreation/senior center complex, organizes the "Reach for the Sky" campaign to provide scholarships to low income students and seniors with the goal of increasing their participation in city programs. According to a city employee who assists with this program, it is available for residents only and based on income level. The scholarships cover registration fees for the local transportation program, the activity fee at the senior center, membership and programs.



Image 1. Typical ranch style homes in south Kettering, January 2012

Housing and Property Assistance

Kettering offers financial support for housing upkeep and maintenance. The 2007 Kettering senior survey indicated that 88.3% of residents over age 55 did not plan to move and 71% of homeowners had made improvements to their homes. Residents were aware of property maintenance regulations in Kettering (84%) and moderately aware of low interest loans offered by the city to help residents achieve property upkeep (48%) (Jones, 2007).

Over 70% of the housing was built when the fashion was to construct single level ranch style homes (Image 1). Focus group respondents lived in either apartments or single-family homes built in the ranch style. There was a shared belief that they were among the oldest people in their neighborhoods or apartment buildings rather than a belief that they lived in a community of older adults who were choosing to age in place. When asked about aging in place “Betty” talked about modifying her home in the following way:

I’ve lived in Kettering 41 years, our starter house is now our ender house, we re-did our bathrooms and we made sure I had a shower that I could just walk right into. If anything would ever need... I mean, you need to have a bathtub for resale value in my neighborhood. Because they are starter homes in my neighborhood there are a lot of young families moving in and they have small children and they need bathtubs. I wanted to change the hall bathroom into one with a walk in shower and I was told by the realtor that I needed to have a bathtub. I mean you know in case we want to sell and move. For resale value.

Her observations suggest that she believes that there is a need to preserve the home for the next family and also allow her and her husband to stay and age in place. Other participants indicated that they modified their homes so that they could stay rather than go to a nursing home. Another respondent moved back into Kettering specifically to live in a home that would accommodate any losses in physical function. He agreed that the adaptability potential of single story homes is easier when stairs are not part of the design.

City development grants for home maintenance were described as very important for maintaining the neighborhoods where seniors live in Kettering, especially with limited income. The city offers no interest loans, *“up to \$27,000 to replace furnaces and windows that must be paid back when you are deceased and when the house is sold,”* according to “Margie” an 83-year-old life long resident of Kettering. Respondents described the “homestead” reduction in the property tax for seniors as *“small but every little bit helps.”* As in other cities, the Kettering fire department visits homes to check fire alarms and city officials monitor property upkeep and issue citations for neglect.

One policy that has potential to expand in Kettering is to allow granny flats. A “granny flat” or ancillary unit is a term used to describe a building addition onto an existing home for the use of the parent or parents of the homeowner. Such apartments or rooms can facilitate for families to invite elders to live in closer proximity to the family home. Zoning for granny flats has shown benefits for older adults in terms of family social opportunities yet many municipalities do not allow for them (Antoninetti, 2008). The cities of Kettering and Dayton drafted a recent city plan to allow “granny flats” in Kettering and Dayton by 2015. Respondents were unaware of this idea and had never thought about moving into a granny flat since they wanted to stay in their own homes. Many had family within driving distance and this was

perceived as providing some piece of mind for those elders.

2. Transportation services and mobility options

<i>H-NORC Quality</i>	<i>Policy Evidence</i>		
	No evidence	Some evidence	Strong evidence
Implement measures that decrease the speed and frequency of automobile traffic (traffic calming).	X		
Public transportation system available and able to accommodate multiple mobility levels.			X
Active community environment policies are in place. i.e. sidewalks well maintained, lighted, and clear of snow, etc.		X	
Existence of shuttle buses to points of interest or facilities, such as malls or hospitals.		X	
Advocacy for daytime driver's license laws for senior citizens.	X		

Participants in the focus groups almost unanimously used the words “easy to get around” when asked about Kettering. All but one respondent was able to drive such that nearly everyone referred to driving as his or her principal means of mobility. There was a significant association with driving as part of how residents experienced the community. A few respondents were unable or unwilling to comment and appeared frustrated when asked about what would happen if they were made to stop driving. “Bill,” a male respondent over the age of 80, described his ability to drive as something he remembers from childhood:

I have had a chauffeur's license since I was 13 years old. I took the [driving] test in a 1.5-ton dump truck. And I parked it perfectly. My father was a good teacher and I had a farm to practice driving on when I was a kid. I think I can drive pretty well and I'll be driving as long as I can drive. I'm not going to be using public transportation services.

He further commented that he previously rode the bus to work when he worked in downtown Dayton but he felt that things were different with regard to public transportation now. He would not expand on this comment. Two other respondents candidly mentioned that they do

not know what would happen if they lost the ability to drive and they did not want to think about it. Another female widow and long term resident of Kettering stated when asked about other ways of getting around in Kettering: *“I have nothing to do with the transportation services. I like to drive. I’ve driven all by myself well, forever.... As long as I can drive I’ll be driving. I don’t know, I can’t answer the question of if I will use the transportation services. I guess I will put a gun to my head! (Laughing).”* Few seniors fostered a habit of using alternative methods of transportation such as riding the bus, walking, or biking. The potential availability of transportation services may help to provide alternatives but the elders in this sample were aligned with other studies. The use of alternative transportation remains a minimal possibility after a lifetime of driving but two respondents had used the local transportation service. “Betty” *“remember[ed] when [her] mother in law stopped driving and she had no transportation except to call for a ride.”* She understood the transportation service as something few young seniors will every consider until they really need it. *“If you belong to the center it’s a big thing here to have access to the transportation, I had to use it when I smashed up my car last year! At age 67 it was nice to be considered a senior.”*

A major report published by Transportation for America in the last year predicts a “mobility crisis” among older Americans. It warns that by the end of 2015, “15.5 million baby boomers will live in communities with little or no access to public transportation” (DeGood, 2011). The report continues to rank cities in groupings based on size in metropolitan area and percent of adults over age 65 that are expected to lack access to transportation. This calculation for the Dayton-Springfield region, inclusive of Kettering, was 57%. However Kettering has more than the average suburban city in terms of transportation options for seniors (communication with senior transportation coordinator).



Image 2. A typical Kettering bus stop with burgundy seating along Stroop Road



Image 3. Another typical bus stop with design feature

Transportation Options in Kettering

Several, fixed route RTA bus lines pass thorough the city with adequate seating and signature burgundy bus stops (Image 2 and 3). A map showing transit stops and bicycle routes in Kettering appears below in Figure 2. The stops appear at approximately one-quarter mile intervals along main streets. Some residential areas are just over a mile from the nearest bus stop. A map showing bus stop location distribution and sidewalks appears below (Figure 1).

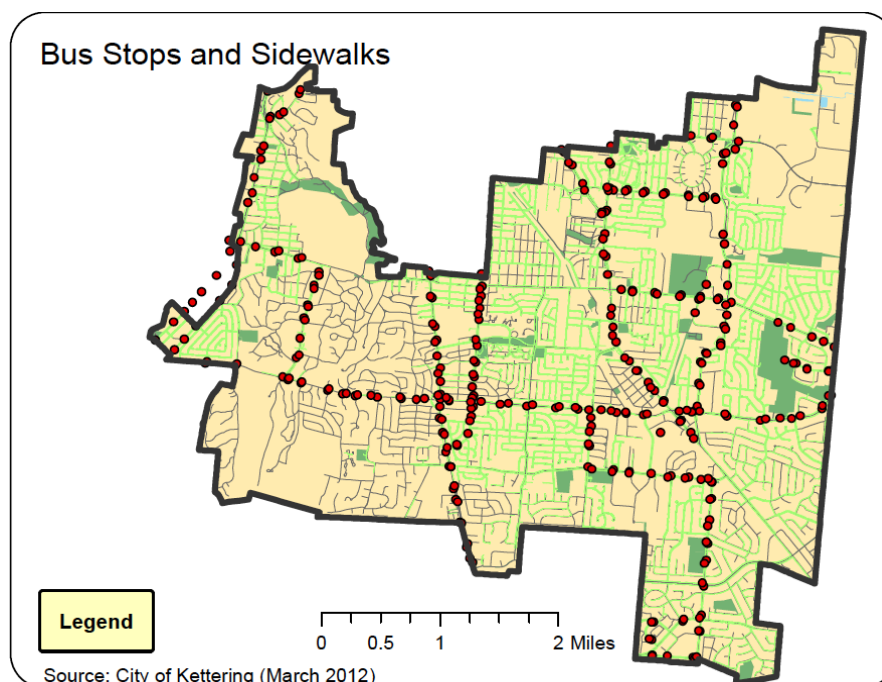


Figure 2: Bus Stops and Sidewalks in Kettering

Two para-transit services are available for senior residents but few use them according to focus group participants and community data. According to Section 223 of the Americans with Disabilities Act (ADA), public transportation organizations must furnish para-transit services to those who cannot use fixed route bus systems (U.S. Department of Transportation, 2012), but this provision is consistently limited by municipality funding and low demand. Project Mobility, a service of the Dayton RTA, has a wider area of service in the region but costs slightly more than the transportation service offered through the Kettering senior center. Project mobility provides shuttle bus services at \$7 dollars per ride for residents of the greater Miami Valley. Kettering residents have access to local transportation services from the senior center at \$3 per ride by appointment, Monday through Friday from 9:00 a.m. to 4:30 p.m. with limited service on the weekends and some evenings for special programs. Rides to the senior center or for shopping trips are \$2 per ride. Destinations for the Kettering transportation service include doctors' appointments, the CIL, groceries, bank, pharmacies, or anywhere within the 1.5 miles of the city

limits (communication with transportation coordinator). Some seniors also use the transportation to get to the senior center as a reduced rate and many volunteers pay for local transportation to fulfill volunteering obligations. Many seniors in Kettering also get rides from family, friends and neighbors though this percentage is unknown.

Project Mobility requires that riders apply and qualify either by being disabled or “be unable to complete the trip using the RTA fixed-route buses due to a combination of disability, architectural and environmental barriers” (Greater Dayton RTA, 2009). Project mobility has a schedule and radius based on the fixed route system but is made by appointment. The Kettering senior transportation is subsidized 80% from the city and is available to any senior over the age of 60. It utilizes three vans and four sedans to provide rides within the city limits of Kettering to residents over the age of sixty. The three 16-passenger vans are also used by the city for children’s activities in the summer. Drivers for the program are provided through the city volunteer program. The numbers of riders between the Kettering systems in 2011 was about 200 regular users at about 1,000 trips per year. According to RTA, project mobility served 85 Kettering residents at least once between July 2010 and January 2011. The usage of Project Mobility in the Dayton region includes 1,254 seniors (direct communication with RTA, 2/2012).

Like other states, Ohio has a gap in available older driver safety information from drivers licensing bureaus (Stutts, 2005). Senior safety provisions in the Kettering city engineering office appear to fill this gap. The lists driver safety programs on its website with access to “Carfit Assessments” and “Roadwise Review” for older drivers (City of Kettering, 2012). It is unclear from this project how frequently Kettering seniors utilize these programs but the availability shows that the city prioritizes safety and well being of its older residents.

3. Neighborhood design for senior activity

<i>H-NORC Quality</i>	<i>Policy Evidence</i>		
	No evidence	Some evidence	Strong evidence
Evidence that streets and intersections are pedestrian friendly and safe.		X	
Adequate duration of time for traffic lights and increased size of street signs.		X	
Presence of walking and bicycle paths that include points of interest (destination points).		X	
The community has recently added new parks, maintains existing parks, and has the adequate park benches or tables in public spaces.			X
Children's play facilities are available			X

Kettering lacks a central business district because it developed as a suburb of Dayton. It is the most centrally located among the region's major cities and townships. Retail areas and restaurants are easily accessible by car due to wide arterial streets with central turning lanes and building setbacks with parking along the street. Residential areas are separate from multiple commercial areas as previously described but efforts to maximize neighborhood for senior physical activity are noticeable throughout the city. Kettering is arguably a retail center for the region as well as hub for promoting community minded senior activity. Families of all ages live in the area and new playgrounds exist in city parks (Figure 3). According to the Kettering senior survey when asked about walking, (respondents were asked how often they walk from their home to shop, go to church, for recreation or for any other purpose), more than one-quarter of respondents (27.1 percent) indicated that they walk daily, while another 20.4 percent of respondents walk 3-5 times per week (Jones, 2007).

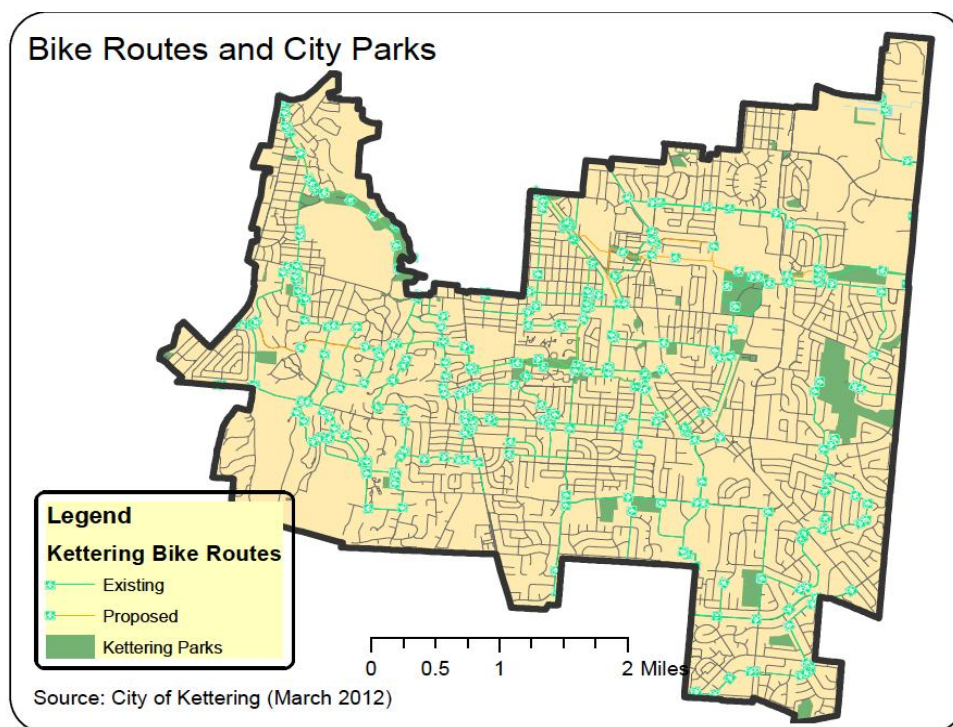


Figure 3: Kettering Bike Routes and City Parks

The city embarked on a recent comprehensive renovation of its parks signage and is committed to providing and maintaining recreational locations for all residents in the long-term. Although walk-ability along the main streets appeared possible, all but one respondent in the focus groups drove to all destinations. “George,” is a single male who lives in Kettering and is the only senior who participated in this study that never learned to drive and therefore walked or used transportation services for all errands. He was especially willing to comment on obstacles to walking within Kettering:

Everything’s roads [in Kettering], there’s no sidewalks to the store you have to walk in the road with a shopping cart. God forbid you get hit by a car when you walk in the road. When you go to a mall when you go to Meijer’s when you go to Kroger’s there are no sidewalks, it’s a tremendous handicap. There is nothing that leads you right to the door as far as sidewalks. Even in the wintertime they keep the roads clean but what about the sidewalks? When you are with a shopping cart you gotta walk in the road.

According to this view, at least part of the streetscape of Kettering discourages walking to destinations. Snow removal is the responsibility of homeowners in the city but community-

based programs exist to assist seniors with snow shoveling such as the “honors program” at Fairmont High School and at Alter High School where honors students are assigned to help seniors in their neighborhood.

There are areas where walkability is not continuous due to lack of sidewalks. One example of a retail area with where sidewalks are not continuous due an out of date city policy where sidewalks were an optional responsibility of business owners occurs along Wilmington Avenue (Images 4 and 5).



Images 4 and 5. Wilmington Avenue, where the sidewalk is continuous on one side and not the other

Improvements to increase mobility options are underway in other parts of the city. Accommodations to improve the walkability and ease of riding a bike in Kettering appear in the

form of pedestrian islands and new paint at cross walks, wider sidewalks, and an emphasis on biking. Current planning for a comprehensive network of bike trails will connect existing bikeways (see Figure 2 above). During this community assessment, I observed seniors walking and using motorized scooters on sidewalks and riding bikes in Kettering. Interestingly, the city engineering office employs a senior volunteer who rides his bike to city hall (communication with engineering office). New bike paths added along one Forrer Road connect commercial areas are a strong sign that Kettering is trying to create choices for mobility among its residents (Image 6). Some recent capital improvement projects are less pedestrian oriented, however.



Image 6. Recently installed bike lanes on Forrer Road, March 2012

Major intersections between arterial roads such as Dorothy lane and Wilmington are now wider after 2011 improvements creating increased distances for street crossing without pedestrian islands. In some cases, five lane intersections increased by four lanes making a much wider and less pedestrian friendly crossing. One is pictured with nine lanes of traffic after widening a section of Dorothy Lane and Wilmington (Image 7). The crossing times at this intersection is 35 seconds to cross Wilmington Avenue and one minute to cross Dorothy Lane (timed by principal investigator). Multiple factors related to planning this intersection created a

wider distance to cross without pedestrian oriented design that might have been completed differently. This intersection shows room for improvement according to pedestrian and senior friendly design such as pedestrian islands or medians similar to those that appear at the intersection of Marshall and Stroop nearby (Image 8).



*Image 7. Intersection of Dorothy Lane and Wilmington Ave
Nine lanes to cross without a pedestrian island in 35 seconds, March 2012*



*Image 8. Intersection of Stroop Road and Marshall
Five lanes to cross to a pedestrian island in 35 seconds*

Senior Drivers

Nearly all respondents in the focus groups reported driving to all destinations. Participants in this study mentioned that they consider how close they live to the grocery store with a sense that *“if I ever needed to walk there, I could. But I always drive.”* Another stated, *“I can walk there but it depends on what I have to buy, I don’t really want to.”* Respondents reinforced the idea that the majority of their interactions with space were experienced from the view from a car window. When asked about a local indoor track in Kettering that lacks windows one respondent said, *“when I want to see outside I drive around and look out my windows, I love nature.”* The idea that appreciation of nature while driving is a norm experienced by this senior and indicates that this respondent developed a relationship with nature as part of driving her car in a suburban environment.

Senior Physical Activity in Kettering

The participants in this study who talked about walking and exercising in Kettering where unanimous in that they were driving to a location to engage in physical activity rather than using a sidewalk or getting a ride from a friend or transportation service. One participant and lifelong resident of Kettering walks *“five days a week in the church gymnasium, I walk two miles. But I drive there to walk. I’ve been doing that for 12 years. There are no uneven parts on the floor. I also come here (to the senior center) for aerobics on Monday, Wednesday, Friday.”* The idea of exercise was defined as part of both a destination and part of a social context. Two widows mentioned that they liked the friends they made in the class. The respondents in this study did not have physical challenges and many mentioned that they respected the many seniors who visit the center who are less physically able, especially those who regularly participate in activities. “Frankie”, a senior who organizes local dances for seniors, shared: *“One guy comes in*

and dances with a cane, I admire him because he has guts to get up and move.”

The city consistently provides locations for walking and recreation for all ages. The favorite walking locations included the indoor tracks at Fairmont High School, the Kettering recreation center, an outdoor track at Delco Park, Indian Ripple park trail and Polen Farm trail. Many seniors use the Fairmont High School track as part of a separate facility operated by the parks and recreation department. One woman, age 77, and long term resident liked the opportunity for seniors to use the same facility that the student athletes use: *“We share facilities. It’s cooperative with the student athletes because they have a nice walking track above the gym.”* There is also an old indoor mall called Town and Country (T&C) where seniors are able to walk year round (Image 9). At one time T&C was considered for partial demolition and re-development, but the seniors in the community advocated saving it as one of the places in town they could use for physical activity.



Image 9. Town and Country Shopping Center, walkers. February 2012

4. Belonging and Social connection

<i>H-NORC Quality</i>	<i>Policy Evidence</i>		
	No evidence	Some evidence	Strong evidence
Neighborhoods perceived as safe and crime free.			X
Population density is at a level that results in regular unplanned social interaction as residents perform their activities of daily living.		X	
Government and community not-for profits promote senior-led volunteerism.			X
Senior participation in municipal government activities includes employment opportunities in appointed positions.			X
Community residents are aware of services and organizations within their community and exhibit high levels of participation.		X	

Respondents unanimously perceived Kettering neighborhoods as safe. However, safety was described from the perspective of traveling inside a car. The respondents described their neighborhoods by how closely they lived to certain parks in Kettering such as Polen Farm, or how close they were to Meijer. One older long term resident of southern Kettering preferred driving on the back roads such as Bigger Road rather than the wider roads with more traffic. A long-term employee of the senior center described a perspective that seniors were so attached to the city of Kettering that very few ever crossed the city limits. She recounted stories of some of the senior center members that thought there was “too much gang violence” to travel into Dayton (communication with senior center employee).

There were some differences between how respondents described what was important for living as a Kettering resident over the age of 55. These ranged from “finding things to do with free time” to “feeling peace of mind because of the existence of senior services.” “Wendy”, a 65-year-old female who moved back to Dayton from Cincinnati mentioned that, “*Dayton has*

museums, a philharmonic and other amenities that are unexpected, other places have higher end homes, Kettering is just comfortable.” Strong positive feelings about the senior center were offered by respondents who felt that it helped them find something to do after retirement. Wendy went on to mention *“I’m not one to go next door and knock and say hi. Gives me a reason to get up and out and get involved. When we first moved back to Kettering I knew about the senior center, it made me feel a lot better, It really helped me a lot gave me a place to go.”* The respondents who were looking for something to do in the senior center tended to be recently retired and younger than 70, while long term residents offered responses that alluded to a feeling of connection to Kettering. The connection to the senior center as a way of finding support and friendship was perceived as important to both single and married respondents.

Two respondents recalled the area before it was Kettering when Van Buren Township was a farming community similar to those that exist in rural Ohio today. The connection to place was strongest among female respondents, all widows over the age of 75, who shared a connection to Kettering such as once being married to husbands who were council members or community volunteers in years past. “Bonnie”, a widow aged 77, remembered the original senior center in a school called Rosie Miller over twenty-five years ago. She mentioned that her membership began at that time when her late husband’s father *“was outstanding volunteer of Montgomery County.”* Another, “Lucy”, age 80 commented on how her neighborhood has changed in terms of knowing her neighbors who do not participate in community activities: *“We need to help these people. I try to know my neighbors, to tell people about what is in the community, how to reach the people who don’t know. Phone calls are a little bit hard anymore because they have so many gate keepers, but I keep on trying.”*

Respondents reported variability with regard to knowing neighbors, which speaks to the difficulty in maintaining social contacts in areas with suburban density. A few female respondents shared stories of negative perceptions of their neighborhoods and neighbors and ways that church life helped to overcome these negative feelings. “Bonnie” described her neighborhood in this way:

My neighborhood stinks. Nobody helps anybody. I moved in when there were all new homes and now it's different. There were more young people.... Now we have three widows, I'm one of them, and we never see each other, I'm in and out a lot. I don't think she does very much. One lady is still working. I hear about other neighborhoods that have people that help... ”

Bonnie described ways she perceived overcoming the isolation in her neighborhood through people she met through her church. She was introduced to a family that regularly helps her with home upkeep as a service that she perceived as essential to her lifestyle. She especially feels “blessed” as a widow who never had children to have the help. Multiple respondents mentioned church life as important for their social connections in Kettering. The most mentioned places of worship were the United Church of Christ, St. Borromeo and St. Albert the Great. The senior center employees were aware of these connections and attempt to post information about city-funded services and activities, such as the transportation program, through local church groups. Help with yard work also exists through local high school programs to assist seniors that match honor students to seniors in a specific neighborhood.

Senior Shopping and Services

Discussion about grocery shopping in Kettering allowed for a sense that the city has options and that some are more “senior friendly.” One respondent thought that having multiple grocery shopping options including Meijer, Kroger, and Trader Joes’ enhanced the community. The respondents who were from urban settings and moved into the area mentioned that large

grocery stores in the region were tough on seniors due to large floor plans. They reported avoiding Kroger Marketplace in Beavercreek because they felt that the items they needed such as milk and eggs were placed too far apart and in the rear of the store. One woman mentioned the *“new store that’s about the size of three football fields. Everything is strategically placed so that you have to buy something to make you shop more. It’s so annoying to shop there, even Meijer is better organized so you don’t have to walk all over the place for essential items.”* Another woman used only the Kroger on Bigger Road because it was considered the best one for seniors due to scale and convenience. She was aware that *“area nursing homes bring their residents to that one because it’s not as huge and overwhelming. I had a friend who passed away last year that used to grab a grocery cart and walk there for exercise since it is not that crowded there either.”* Field observation of store users supports the idea that many senior residents use the Bigger Road Kroger.

Kettering Volunteers

The Kettering Senior Survey in 2007 found that volunteerism of senior residents overall was 54.8% (Jones, 2007). During a state of the city address the mayor of Kettering stated, in 2011, 1,000 volunteers contributed 39,100 hours of service valued at more than \$800,000 “we are creating more and more opportunities for volunteers” (Patterson, 2012). Volunteering opportunities in Kettering can be found as part of city managed positions such as helping at the greeter’s desk at the CIL senior center, ushering at the Frazee pavilion, or serving lunch at the CIL, or contributing to the city transportation program. There are also positions available at other organizations such as Kettering Hospital and local church groups. The senior services coordinator worked with local volunteers of all ages to coordinate the “Check Up Call service” instituted in 2010 to call frail elderly or disabled residents daily, to check on their welfare.

According to the city staff devoted to volunteer services, many of the volunteers that they work with have a different volunteering job every day. Many are motivated by a point system that keeps track of hours that are recognized and regular city luncheons.

It was unexpected that a majority of senior volunteers with city programs are not senior center members. Volunteer coordinators felt that this was because some seniors “*think that [senior centers are] just for old people*” and “*people feel like they don’t need that as a social outlet because they have family nearby or a spouse.*” Perhaps this is related to changes between “the great generation” of joiners and the war babies and baby boomers that are stereotypically more independent. One active community volunteer who was both a senior center member and a city volunteer provided clear insight as to the recent economic hardship that is affecting Kettering residents. “Henrietta”, an 82-year-old widowed woman was concerned about Kettering where she raised a family beginning forty years ago:

It’s changed a great deal; we now have 40% of our students receiving free or reduced lunch. I would never have believed that 20 years ago. Do you know about the backpack program? We provide food for the children to take home on weekends. The headquarters are in our church (St. Albert the Great Catholic Church). Other organizations participate. And in the summer we feed these children. We go to parking lots by the apartments of Whipp Road, a week at a time.

“The backpack program” is helping the increasing low-income population of Kettering where lunches are placed in lockers for children to take home and eat over the weekend.

Henrietta’s perspective demonstrates commitment to her community that grew out of long-term involvement within Kettering. Her story again underscored the community building associated with religious institutions in Kettering. Another respondent and member of the Kettering Senior Show Choir mentioned that the Christ United Methodist Church provides a large practice space for free for the choir each week. She regarded the church as providing many services for the

community even though she did not attend services there. The choir performs all over the region in nursing homes and other locations and is another asset related to active seniors in Kettering.

The health benefits to volunteering were strongly noted by the city volunteer coordinators. They mentioned often people call them who have recently lost a spouse and are looking for “renewed purpose in life.” The coordinators relayed watching people blossom into their new roles. They perceive the volunteer office as one way that the city is improving the health of its citizens, especially seniors. The staff relayed stories of becoming involved in the lives of their volunteers through attending funerals, sending get-well cards, and occasionally convincing volunteers that they cannot drive a car anymore. The coordinators mentioned being asked by family to talk to their elder about loss of function and they work closely with the senior service coordinator in these cases. Interestingly a survey to find out why people volunteered in Kettering found that the main reason was “because it’s fun.”

5. Health related service use

<i>H-NORC Quality</i>	<i>Policy Evidence</i>		
	No evidence	Some evidence	Strong evidence
A central agency is aware of health needs of the residents		X	
Clinics, home health agencies, hospital services exist within close proximity to neighborhoods.		X	
Residents are living in private homes where they are also receiving some measure of home health service.			X
Programs promoting prevention through health screening and regular exercise are available.			X
Emergency medical services factor in the special needs of older adults.			X

Qualifying for subsidized healthcare services for middle income seniors is difficult because this group typically makes too much to qualify for Medicaid and too little to afford

services without taking steps, such as transferring assets, so that they will qualify. Seniors in the focus groups reported that they asked the senior services coordinator questions about home-based services or about Medicare or Medicaid in the past or they knew someone who had. Because the coordinator is able to report to the city manager there is frequent direct communication about the homebound seniors in Kettering with the police and fire departments. This is the function of the Frail Elderly Council, which meets quarterly and consists of city employees and emergency personnel who aim to maximize the community awareness of these elders.

An expected, a recurring sentiment of study participants was defining independence as taking care of needs without “burdening” family members. Participants over the age of eighty stated they would rather not call children unless they felt they really needed help. One female widow who was familiar with the high costs of nursing homes mentioned that one of the nice ones in the area were \$7,000 dollars per month. When asked if she thought she would move to a nursing home she replied, *“I want to (go) out of my front door (with) feet first. If there were a medical condition that would make me unsafe in the home, then I would go to a nursing home. There is a lot of home health care in this community to keep you from needing to go.”* Three of the respondents had utilized home health care services as part of rehabilitation after illness. Those who did so were able to find help through their health care provider due to the nature of their illnesses or accident.

Views about losing function with age were expressed with humor. *“It’s hard when you get to be my age and you think you can do everything that you used to be able to do. And you think oh my goodness I really can’t walk as far as I used to. Or stand... And it’s a shock to your*

system (laughing).” Another respondent described being diagnosed with a B12 deficiency and how was to receive home physical rehabilitation:

I had home health care for a while. Lost the use of my right leg. I thought it was funny. Then went to the ER. I was severely B12 deficient. So the doctors at Kettering hospital had me do some PT/OT. It did very little, I felt better once I was able to return to the exercise class... and now I need a B12 shot once a month... I credit the class for keeping me so mobile, keeps my bones and muscles worked to the nth degree. Many of my friends who do not exercise have more medical problems.

She perceived her routine of visiting the senior center three times a week for the exercise classes as more important to her health than the physical therapy she received through home health. These perceptions about aging show that Kettering adults in this sample were able to communicate the sense of loss that can accompany aging freely and in a healthy way.

Discussion

This study shows that Kettering, Ohio displays qualities that align with Healthy Naturally Occurring Retirement Community themes. Some qualities were more evident, than others. For example, strong evidence of economic benefits and services for seniors and sense of belonging to place emerged overall. There was moderate evidence of programs aimed at maximizing mobility, especially senior transportation programs, less support for community design for senior activity (also known as universal design¹) exists in Kettering than would be expected in most suburban contexts. The city of Kettering, however, pushes these topics, transportation and universal design, forward for all residents. The significance of these findings echoes current thinking that our communities, especially in suburban areas, will need further community supports for seniors in the future that can help to address senior health and wellness related to social connections and connection to place. The municipality of Kettering and its community members continue to make progress toward these ends.

Kettering exemplifies an H-NORC through the development of a senior-responsive municipal structure, availability of opportunities for retired people through city recreation and volunteering offices, and support of a city sponsored senior service coordination. All were widely perceived as positive city attributes through discussions with residents and field observation. Even though less than 20% of the total senior population participates in senior activities, city subsidized senior transportation services and a nationally recognized senior center contribute to a supportive environment. Similar to other studies of communities with formal NORC programs, Kettering seniors communicate a sense of belonging through a lifetime of

¹ “Universal design” can be defined through a rigorous set of principles applied to products, technologies, buildings and public spaces that allow for all levels of physical or functional ability to participate in the use of products or activities within such environments.

involvement in community and church activities. Seniors in Kettering also shared an interest in maintaining their health through scheduled physical activity which was most often conducted at an indoor destination in city managed locations. Some did note that Town and Country Shopping Center was also a site for fitness walking. Participants also identified senior friendly semi-public places in Kettering, such as the Bigger Road Kroger. These friendly places were notable because of their location, proximity to less busy roads, and relative ease in finding necessities in the store. Also, there were multiple areas in Kettering that have high concentrations of seniors that happen to be closer to certain retail areas, including the Bigger Road Kroger where senior housing may relate to lower income level rather than convenience to amenities.

While progress toward options for mobility exists in Kettering, its built environment appears less supportive of senior activity as outlined in H-NORC themes. Part of this difference is due to Kettering's suburban environment. The H-NORC themes are rooted in observations of healthy seniors living in urban settings as opposed to Kettering's suburban context. Hence, Kettering's transportation infrastructure and policies are weak compared to the research study areas that underlie initial H-NORC themes, including:

- Zoning that allows for walkability
- Traffic calming implementation (narrow lanes, crosswalk bump-outs) [to improve the pedestrian and bicycling environment]
- Pedestrian friendly intersections
- Population density allowing for unplanned interactions among residents

It is widely suspected that suburban seniors, especially those without family supports, confront obstacles to community engagement with the loss of the ability to drive, while urban seniors often have more options for independent mobility because their environments may include wider range of mobility options such as walking, bus routes, or bike routes and they may have closer proximity to services due to increased density (DeGood, 2011). In contrast, obstacles

related to suburban settings include low population density which can lead to isolation from neighbors, greater distances to the grocery store, and incongruous sidewalks or wide roadways and parking lots that reduce feasibility of walking to destinations as compared to more urban settings. For example in a suburban setting a wide parking lot forms an obstacle to pedestrians reaching entrances to grocery stores where in an urban setting the entrance to the store will be along the sidewalk itself.

Although the built environment in Kettering can be seen as less supportive for seniors according to H-NORC criteria, the strength of the programs and the culture within the community still fulfill H-NORC qualities. This research demonstrates that services to support aging in place serve to “buoy” the negative effects of lack of environmental support for aging adults as described by Glass (Glass & Balfour, 2003). These programs are so supportive that seniors from surrounding communities frequently travel to the senior center and volunteering opportunities located in Kettering. Kettering, then, is a regional center for senior activities made possible because of its central location and easy access for the surrounding townships and cities. Kettering is now central to eight communities. The non-resident census of seniors utilizing programs and facilities and volunteering throughout the city speaks to the community’s reputation within the region as a city that supports seniors. As long as these seniors continue to drive or access transportation services, they are remaining engaged not only in their community but also in their region. Still, only a minority of seniors chose to be active in a senior center setting.

Many senior focus group participants voiced opinions that not enough local seniors are involved with activities in the senior center. What is behind these numbers? The small percentage of residents participating in senior activities or volunteer programs may be due to

other social factors. For example, individual seniors have more social support in terms of nearby family members or may have different social needs. It may also be that the local YMCA fulfills some of the recreation as well as social needs for Kettering seniors. Another possibility may relate to recent economic challenges that make some residents unable to afford activities.

Studies show that perceptions of well being among seniors relate to the number of regular social interactions, especially among family and friends. The need for socialization therefore may not extend beyond the existing family or church group, as is more often the case in less urbanized settings (Mair & Thivierge-Rikard, 2010). For this reason, family support of seniors in Kettering may negatively influence the likelihood that they will seek other social opportunities outside family connections. Similarly, significant associations with other community organizations such as churches, synagogues, schools, or volunteering positions may have the same affect. These social connections may account for the reason participation in senior center activities is lower than expected in Kettering and why most senior volunteers in Kettering are not senior center members.

This study has limitations. Perceptions of senior center members provided some variability, but captured a somewhat limited view of Kettering seniors according to actual numbers of seniors in census data. The majority of seniors in Kettering are not members of the senior center. Future studies could compare the point of view of homebound seniors and/or less involved seniors with views represented in this study. Another limitation is related to the scale of this assessment. This project looked at census-defined boundaries to approximate locations where residents are aging in place. Other studies utilize the study participant's definition of neighborhood boundary as a means of identifying neighborhood qualities. Future studies could allow senior participants to draw boundaries and map their own communities to further elucidate

the senior areas of Kettering. Topics to explore could include: neighborhood boundaries, senior travel patterns, the pedestrian radius of local shopping centers, high accident areas or places that feel unsafe, locations of vacancy, and places with significant meaning for seniors.

This project has helped me both reflect on the challenges one faces when working with this population and envision new possibilities. One challenge for this project was gathering ideas about mobility from a sample of seniors that drives everywhere. It was difficult for most of the study participants to reconsider mobility (according to the author's bias) as a public health problem. One way to better understand mobility in Kettering would be to include the ideas of residents of all ages as part of a community-walking audit similar to the work of Richard Jackson (2011), who suggests that flexibility in considering design solutions may lie in the perspective of younger minds less "adapted" to place than seniors. From another vantage, long-term research projects aimed at evaluating traditional public health outcomes (e.g., obesity, depression), community engagement and sense of belongingness in suburban settings have the potential to contribute to an expanded definition future public health initiatives. Indeed, improvements being made to the current infrastructure for biking and walking in Kettering has the potential to influence health behaviors and sense of belonging the community and provide an opportunity for further public health research.

The strength of this study is that it is a preliminary community assessment that reflects recent trends in public health that explore that ways that municipal policies can support wellness. Kettering provides senior services and opportunities to remain social after retirement. These amenities are perceived as helpful for residents who described suburban isolation after retirement and they continue a sense of purpose and connections for long term residents. Kettering has a wide range of services and amenities for seniors who are aging in place and remaining active.

City improvement projects demonstrate a commitment toward neighborhoods designed for senior activity in the future. Furthermore, the city engineering department's role in actively retrofitting the community to allow for improved biking and walking options has potential to further improve the health and mobility options for all ages in the community according to goals of complete streets and universal design. Kettering is a unique example of a regional suburban H-NORC community.

Recommendations

The following recommendations attempt to synthesize observations made by the study investigator. Each recommendation suggests how Kettering can enhance the qualities that define it as a Healthy Naturally Occurring Retirement Community as derived from comments during focus groups and general observations during field study. The recommendations focus on the care of the aging population, the services provided in Kettering, as well as mobility and transportation options. The influence of Dr. Richard Jackson's (2011) recent work is apparent in these recommendations in terms of ways to make the suburbs less car dependent and advocating for universal design.

1. Continue collaboration opportunities among all organizations providing transportation to seniors in the Miami Valley. A better use of resources could occur with increased collaboration including programs that encourage rides from family, friends, and neighbors. The regional need for transportation services should be further studied through continued collaboration among public and private entities.

2. Continue to support universal design and smart growth for Kettering citizens. The recent emphasis on new bus stop shelters and bike lanes within the city fits the concepts of smart growth and universal design where citizens have options for mobility. New construction can also shift toward a pedestrian friendly model. One example of this type of construction is the storefront on the corner of Dorothy Lane and Far Hills Avenue. Because it fronts a sidewalk it emphasizes pedestrian rather than automotive orientation and reinforces walkable connections to business. The city could host design charettes for the public to familiarize citizens to how these design concepts can reinforce healthy lifestyles at all ages.

3. Improve pedestrian connections to retail entrances. When pedestrian walkways are clearly marked and uninterrupted there is a safety benefit for all ages. For example, improving transitions from sidewalks to the entrances of Town and Country Shopping Center may allow for improved perceived safety and increased walkability. This safety element could resemble a large speed bump for cars with a flat walkway across a parking lot or reflective paint could be used.

4. Advocate for public transportation use in Kettering. Give young people and adults a chance to try a bus ride to demystify the process of public transportation in a population that might never use it. The current stigma is a nationwide problem and may be changed if people are given an opportunity to try public transportation locally.

5. Allow for mixed-use zoning in Kettering. The zoning in Kettering fits an outdated model ideal for single families when residents had young children. Mixed-use developments are possible in suburbs and can allow for the creation of more walkable neighborhoods.

6. Increase intergenerational contact at the senior center. Since many seniors in the area have extended family nearby the CIL could host more family inclusive events. Community wide events such as potlucks, chili cook offs or recipe exchanges may allow for increased social support for Kettering seniors. Such events may also combat the stigma of senior center membership for non-members in the community.

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Appendix A: Master scoring grid with H-NORC examples

<i>H-NORC quality</i>	<i>Policy Evidence</i>		
1. Economic and Policy benefits for seniors	No evidence	Some evidence	Strong evidence
Zoning allows walking distance access to goods and services .		X	
Property tax concessions or upkeep assistance exists for homeowners.			X
Local service providers and community businesses make services available and affordable to residents.			X
Local government progressively demonstrates senior-friendly policy decisions.			X
Evaluation/Advocacy of age relevant issues in long term planning in state, regional, county or community levels.			X
2. Transportation services and mobility options	No evidence	Some evidence	Strong evidence
Implement measures that decrease the speed and frequency of automobile traffic (traffic calming).	X		
Public transportation system available and able to accommodate multiple mobility levels.			X
Active community environment policies are in place. i.e. sidewalks well maintained, lighted, and clear of snow, etc.		X	
Existence of shuttle buses to points of interest or facilities, such as malls or hospitals.		X	
Advocacy for daytime driver's license laws for senior citizens	X		
3. Neighborhood design for senior activity	No evidence	Some evidence	Strong evidence
Evidence that streets and intersections are pedestrian friendly and safe.		X	
Adequate duration of time for traffic lights and increased size of street signs.		X	
Presence of walking and bicycle paths that include points of interest (destination points).		X	
The community has recently added new parks, maintains existing parks, and has the adequate park benches or tables in public spaces.			X
Children's play facilities are available			X

<i>H-NORC quality</i>	<i>Policy Evidence</i>		
4. Belonging and Social connection	No evidence	Some evidence	Strong evidence
Neighborhoods perceived as safe and crime free.			X
Population density is at a level that results in regular unplanned social interaction as residents perform their activities of daily living.		X	
Government and community not-for profits promote senior-led volunteerism.			X
Senior participation in municipal government activities includes employment opportunities in appointed positions.			X
Community residents are aware of services and organizations within their community and exhibit high levels of participation.		X	
5. Health related service use	No evidence	Some evidence	Strong evidence
A central agency is aware of health needs of the residents		X	
Clinics, home health agencies, hospital services exist within close proximity to neighborhoods.		X	
Residents are living in private homes where they are also receiving some measure of home health service.			X
Programs promoting prevention through health screening and regular exercise are available.			X
Emergency medical services factor in the special needs of older adults.			X

Appendix B: Public Health Competencies Met

Specific Competencies
Domain #1: Analytic Assessment Skill
Defines a problems
Determines appropriate uses and limitations of both quantitative and qualitative data
Identifies relevant and appropriate data and information sources
Evaluates the integrity and comparability of data and identifies gaps in data sources
Applies ethical principles to the collection, maintenance, use, and dissemination of data and information
Partners with communities to attach meaning to collected quantitative and qualitative data
Makes relevant inferences from quantitative and qualitative data
Obtains and interprets information regarding risks and benefits to the community
Applies data collection processes, information technology applications, and computer systems storage/retrieval strategies
Recognizes how the data illuminates ethical, political, scientific, economic, and overall public health issues
Domain #2: Policy Development/Program Planning Skills
Collects, summarizes, and interprets information relevant to an issue
Identifies, interprets, and implements public health laws, regulations, and policies related to specific programs
Articulates the health, fiscal, administrative, legal, social, and political implications of each policy option
Decides on the appropriate course of action
Develops mechanisms to monitor and evaluate programs for their effectiveness and quality
Domain #3: Communication Skills
Communicates effectively both in writing and orally, or in other ways
Solicits input from individuals and organizations
Advocates for public health programs and resources
Leads and participates in groups to address specific issues
Uses the media, advanced technologies, and community networks to communicate information
Effectively presents accurate demographic, statistical, programmatic, and scientific information for professional and lay audiences
Attitudes
Listens to others in an unbiased manner, respects points of view of others, and promotes the expression of diverse opinions and perspectives
Domain #4: Cultural Competency Skills
Utilizes appropriate methods for interacting sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, racial, ethnic and professional backgrounds, and persons of all ages and lifestyle preferences
Identifies the role of cultural, social, and behavioral factors in determining the delivery of public health services
Develops and adapts approaches to problems that take into account cultural differences
Attitudes
Understands the dynamic forces contributing to cultural diversity
Understands the importance of a diverse public health workforce

Specific Competencies
Domain #5: Community Dimensions of Practice Skills
Establishes and maintains linkages with key stakeholders
Utilizes leadership, team building, negotiation, and conflict resolution skills to build community partnerships
Collaborates with community partners to promote the health of the population
Identifies how public and private organizations operate within a community
Accomplishes effective community engagements
Identifies community assets and available resources
Develops, implements, and evaluates a community public health assessment
Describes the role of government in the delivery of community health services
Domain #6: Basic Public Health Sciences Skills
Defines, assesses, and understands the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services
Understands the historical development, structure, and interaction of public health and health care systems
Identifies and applies basic research methods used in public health
Applies the basic public health sciences including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries
Identifies and retrieves current relevant scientific evidence
Attitudes
Develops a lifelong commitment to rigorous critical thinking
Domain #7: Financial Planning and Management Skills
Manages information systems for collection, retrieval, and use of data for decision-making
Domain #8: Leadership and Systems Thinking Skills
Identifies internal and external issues that may impact delivery of essential public health services (i.e. strategic planning)